REPORT DOCUMENTATION PAGE

AFRL-SR-AR-TR-03-

0444

1. AGENCY USE ONLY (Leave blank)	2. REPORT DATE 10/01/03	3. REPORT TYPE AN Final report

4. TITLE AND SUBTITLE
Protein based Nanomaterials Symposium

5. FUNDING NUMBERS
F49620-03-1-0036

6. AUTHOR(S)
Randolph V. Lewis

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)

University of Wyoming
Box 3944
Laramie, WY 82071-3944

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)

AFSOR
4015 Wilson Blvd, Room 713
Arlington, VA 22203-1954

10. SPONSORING / MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES

12a. DISTRIBUTION / AVAILABILITY STATEMENT
No restrictions

DISTRIBUTION STATEMENT A
Approved for Public Release
Distribution Unlimited

20031104 007

13. ABSTRACT ***(Maximum 200 Words)***

Biomaterials or bio-based materials, particularly those based on proteins, have become increasingly important as models for future materials development. Despite the interest and excitement in this field there have been very few meetings organized around this topic. There are meetings based a single protein family such as collagen or silk but very few with a broader scope. This symposium is designed to provide an overview of a number of current proteins being explored as protein based materials. The focus is on the basic research being done to understand these proteins and how they can become the basis for materials. We included researchers from both university and company laboratories to insure a broad overview. A book will be published from the proceedings of the symposium.

14. SUBJECT TERMS	15. NUMBER OF PAGES
biomaterials, proteins, silk,	3
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	18. SECURITY CLASSIFICATION OF THIS PAGE	19. SECURITY CLASSIFICATION OF ABSTRACT	20. LIMITATION OF ABSTRACT
Unclassified			

RANDOLPH V. LEWIS

Dept. of Molecular Biology
University of Wyoming
Box 3944
Laramie, WY 82071-3944

Final Performance Report for
F49620-03-1-0036

Protein Based Nanomaterials Symposium Support

Objectives:

Biomaterials or bio-based materials, particularly those based on proteins, have become increasingly important as models for future materials development. Despite the interest and excitement in this field there have been very few meetings organized around this topic. There are meetings based a single protein family such as collagen or silk but very few with a broader scope. This symposium is designed to provide an overview of a number of current proteins being explored as protein based materials. The focus is on the basic research being done to understand these proteins and how they can become the basis for materials. We included researchers from both university and company laboratories to insure a broad overview. A book will be published from the proceedings of the symposium.

Status of effort:

The project is completed except for publication of the book.

Accomplishments:

The symposium was held as described and the book is in the process of editing. The speakers are listed below.

Dan W. Urry, U. of Minnesota, The Comprehensive Hydrophobic Effect in Protein-based Polymers

Herbert Waite, U. of California, Santa Barbara, The mechanical consequences of biopolymeric gradients in byssal threads

David Kaplan, Tufts University, Controlling Assembly of Fibrous Proteins

Randolph V. Lewis, U. of Wyoming, Designing Spider Silks with Defined Properties

Costas Karatzas, Nexia Biotechnologies Inc, Producing Spider Silk Proteins at Commercial Levels

Ray F Salemme, President, 3D Pharmaceuticals, Design Principles for Self-Assembling Nano Structures Based on Biopolymers

V. Renugopalakrishnan Design of Protein-based Nanodevices

Roberto Bogomolni, Bacterial Rhodopsins, light-driven electrochemical and optomechanical devices.

Sumio Iijima, NEC, Japan and Meijo University, Nagoya, Japan, Bacterial Rhodopsins

Markus A. Wolperdinger, Munich Innovative Biomaterials GmbH, The role of Bacteriorhodopsin in nanotechnology and technical applications

Jussi Parkkinen, Univ. of Joensuu, Design principles of bacteriorhodopsin imaging systems

Jeff A. Stuart, Bacteriorhodopsin based 3D optical memory

A key lesson learned was that attendance for pre-conference symposia is limited due to travel and expense considerations. In the future we will hold symposia only in conjunction with the regularly scheduled meeting times.

Personnel:

Complete or partial travel support was provided for 8 of the speakers.

Publications:

The book from the symposium is being edited with expectations of publication early 2004.

Interactions/Transitions:

The symposium attendance was approximately 80 people.

Inventions:

None to date

Honors/Awards:

None to date